

# Frequency Mixer

HJK-ED9560/1

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=30MHz<br>(dB) |       |      |
|---------------------|-------------|-------------------------------------------------------|-------|------|
|                     |             | @LO (dBm)                                             |       |      |
|                     |             | +14                                                   | +17   | +20  |
| 240.1               | 210.1       | 11.62                                                 | 10.10 | 9.19 |
| 300.6               | 270.6       | 10.41                                                 | 9.17  | 8.30 |
| 361.0               | 331.0       | 9.12                                                  | 7.93  | 7.32 |
| 421.5               | 391.5       | 8.11                                                  | 7.25  | 6.90 |
| 482.0               | 452.0       | 7.47                                                  | 6.96  | 6.76 |
| 542.5               | 512.5       | 7.65                                                  | 7.35  | 7.27 |
| 602.9               | 572.9       | 6.84                                                  | 6.75  | 6.73 |
| 663.4               | 633.4       | 6.67                                                  | 6.61  | 6.67 |
| 723.9               | 693.9       | 6.52                                                  | 6.44  | 6.48 |
| 784.4               | 754.4       | 6.62                                                  | 6.51  | 6.46 |
| 844.8               | 814.8       | 6.86                                                  | 6.68  | 6.58 |
| 905.3               | 875.3       | 7.23                                                  | 6.93  | 6.80 |
| 965.8               | 935.8       | 7.62                                                  | 7.24  | 7.07 |
| 1026.2              | 996.2       | 7.91                                                  | 7.43  | 7.22 |
| 1086.7              | 1056.7      | 8.26                                                  | 7.69  | 7.43 |
| 1147.2              | 1117.2      | 8.45                                                  | 7.82  | 7.53 |
| 1207.7              | 1177.7      | 8.79                                                  | 8.04  | 7.72 |
| 1268.1              | 1238.1      | 9.02                                                  | 8.23  | 7.86 |
| 1328.6              | 1298.6      | 9.22                                                  | 8.34  | 7.95 |
| 1389.1              | 1359.1      | 9.39                                                  | 8.50  | 8.11 |
| 1469.7              | 1439.7      | 9.47                                                  | 8.60  | 8.23 |
| 1530.2              | 1500.2      | 9.54                                                  | 8.61  | 8.23 |
| 1610.8              | 1580.8      | 9.44                                                  | 8.51  | 8.13 |
| 1671.3              | 1641.3      | 9.24                                                  | 8.40  | 8.04 |
| 1751.9              | 1721.9      | 9.06                                                  | 8.30  | 7.99 |
| 1812.4              | 1782.4      | 8.98                                                  | 8.20  | 7.90 |
| 1893.0              | 1863.0      | 8.66                                                  | 8.03  | 7.78 |
| 1953.5              | 1923.5      | 8.48                                                  | 7.91  | 7.72 |
| 2034.1              | 2004.1      | 8.32                                                  | 7.86  | 7.68 |
| 2094.6              | 2064.6      | 8.25                                                  | 7.83  | 7.68 |
| 2175.2              | 2145.2      | 8.09                                                  | 7.79  | 7.67 |
| 2235.7              | 2205.7      | 8.06                                                  | 7.83  | 7.74 |
| 2316.3              | 2286.3      | 8.15                                                  | 7.96  | 7.88 |
| 2376.8              | 2346.8      | 8.24                                                  | 8.09  | 8.03 |
| 2457.4              | 2427.4      | 8.42                                                  | 8.30  | 8.26 |
| 2517.9              | 2487.9      | 8.61                                                  | 8.49  | 8.45 |
| 2598.5              | 2568.5      | 8.87                                                  | 8.73  | 8.68 |
| 2659.0              | 2629.0      | 9.13                                                  | 8.96  | 8.91 |
| 2739.6              | 2709.6      | 9.69                                                  | 9.42  | 9.36 |
| 2800.1              | 2770.1      | 10.25                                                 | 9.87  | 9.76 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       |
|---------------------|-------------|--------------------|-------|-------|
|                     |             | @LO (dBm)          |       |       |
|                     |             | +14                | +17   | +20   |
| 240.1               | 210.1       | 13.68              | 15.10 | 16.69 |
| 300.6               | 270.6       | 15.15              | 17.15 | 19.71 |
| 361.0               | 331.0       | 18.68              | 22.55 | 22.53 |
| 421.5               | 391.5       | 23.61              | 26.79 | 27.32 |
| 482.0               | 452.0       | 18.34              | 19.88 | 21.96 |
| 542.5               | 512.5       | 20.99              | 25.58 | 28.62 |
| 602.9               | 572.9       | 26.71              | 29.38 | 32.07 |
| 663.4               | 633.4       | 29.77              | 32.22 | 32.79 |
| 723.9               | 693.9       | 30.75              | 33.98 | 32.22 |
| 784.4               | 754.4       | 30.95              | 34.12 | 36.01 |
| 844.8               | 814.8       | 29.27              | 32.76 | 36.66 |
| 905.3               | 875.3       | 25.77              | 30.59 | 33.55 |
| 965.8               | 935.8       | 24.15              | 28.32 | 31.94 |
| 1026.2              | 996.2       | 22.81              | 27.89 | 31.13 |
| 1086.7              | 1056.7      | 21.82              | 26.56 | 30.38 |
| 1147.2              | 1117.2      | 21.28              | 25.31 | 29.86 |
| 1207.7              | 1177.7      | 21.31              | 24.63 | 28.80 |
| 1268.1              | 1238.1      | 23.21              | 26.26 | 28.95 |
| 1328.6              | 1298.6      | 24.99              | 26.06 | 27.25 |
| 1389.1              | 1359.1      | 24.91              | 25.25 | 26.35 |
| 1469.7              | 1439.7      | 22.38              | 23.51 | 25.06 |
| 1530.2              | 1500.2      | 22.18              | 23.67 | 25.42 |
| 1610.8              | 1580.8      | 22.45              | 24.55 | 26.64 |
| 1671.3              | 1641.3      | 22.61              | 25.29 | 27.67 |
| 1751.9              | 1721.9      | 22.77              | 25.63 | 28.41 |
| 1812.4              | 1782.4      | 22.52              | 25.44 | 28.42 |
| 1893.0              | 1863.0      | 22.94              | 25.63 | 28.55 |
| 1953.5              | 1923.5      | 23.89              | 26.87 | 29.60 |
| 2034.1              | 2004.1      | 24.77              | 27.73 | 30.37 |
| 2094.6              | 2064.6      | 24.66              | 27.76 | 30.63 |
| 2175.2              | 2145.2      | 25.36              | 28.35 | 31.85 |
| 2235.7              | 2205.7      | 26.24              | 29.49 | 33.04 |
| 2316.3              | 2286.3      | 26.84              | 30.15 | 33.97 |
| 2376.8              | 2346.8      | 26.91              | 30.28 | 34.83 |
| 2457.4              | 2427.4      | 26.94              | 30.29 | 34.94 |
| 2517.9              | 2487.9      | 26.77              | 29.66 | 33.70 |
| 2598.5              | 2568.5      | 26.11              | 28.80 | 32.32 |
| 2659.0              | 2629.0      | 25.48              | 28.24 | 32.11 |
| 2739.6              | 2709.6      | 24.69              | 27.39 | 31.10 |
| 2800.1              | 2770.1      | 24.49              | 26.77 | 30.23 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF IN=+17dBm<br>(dB) |      |      |
|---------------------|-------------|--------------------------------------|------|------|
|                     |             | @LO (dBm)                            |      |      |
|                     |             | +14                                  | +17  | +20  |
| 240.1               | 210.1       | 3.84                                 | 3.09 | 2.06 |
| 300.6               | 270.6       | 3.26                                 | 2.33 | 1.35 |
| 361.0               | 331.0       | 2.53                                 | 1.79 | 0.87 |
| 421.5               | 391.5       | 2.58                                 | 1.37 | 0.23 |
| 482.0               | 452.0       | 3.31                                 | 1.61 | 0.57 |
| 542.5               | 512.5       | 1.15                                 | 0.83 | 0.39 |
| 602.9               | 572.9       | 0.67                                 | 0.31 | 0.18 |
| 663.4               | 633.4       | 0.31                                 | 0.17 | 0.18 |
| 723.9               | 693.9       | 0.24                                 | 0.13 | 0.17 |
| 784.4               | 754.4       | 0.30                                 | 0.14 | 0.11 |
| 844.8               | 814.8       | 0.46                                 | 0.22 | 0.13 |
| 905.3               | 875.3       | 0.72                                 | 0.37 | 0.19 |
| 965.8               | 935.8       | 1.00                                 | 0.51 | 0.24 |
| 1026.2              | 996.2       | 0.90                                 | 0.53 | 0.24 |
| 1086.7              | 1056.7      | 0.84                                 | 0.57 | 0.27 |
| 1147.2              | 1117.2      | 0.83                                 | 0.60 | 0.31 |
| 1207.7              | 1177.7      | 0.77                                 | 0.60 | 0.31 |
| 1268.1              | 1238.1      | 0.67                                 | 0.57 | 0.31 |
| 1328.6              | 1298.6      | 0.94                                 | 0.74 | 0.43 |
| 1389.1              | 1359.1      | 1.11                                 | 0.76 | 0.44 |
| 1469.7              | 1439.7      | 1.08                                 | 0.86 | 0.51 |
| 1530.2              | 1500.2      | 0.90                                 | 0.87 | 0.54 |
| 1610.8              | 1580.8      | 0.90                                 | 0.86 | 0.53 |
| 1671.3              | 1641.3      | 0.85                                 | 0.79 | 0.46 |
| 1751.9              | 1721.9      | 0.86                                 | 0.77 | 0.44 |
| 1812.4              | 1782.4      | 0.89                                 | 0.79 | 0.45 |
| 1893.0              | 1863.0      | 0.90                                 | 0.76 | 0.43 |
| 1953.5              | 1923.5      | 0.85                                 | 0.63 | 0.35 |
| 2034.1              | 2004.1      | 0.83                                 | 0.56 | 0.31 |
| 2094.6              | 2064.6      | 0.84                                 | 0.55 | 0.30 |
| 2175.2              | 2145.2      | 0.78                                 | 0.48 | 0.27 |
| 2235.7              | 2205.7      | 0.69                                 | 0.38 | 0.23 |
| 2316.3              | 2286.3      | 0.65                                 | 0.34 | 0.20 |
| 2376.8              | 2346.8      | 0.67                                 | 0.34 | 0.19 |
| 2457.4              | 2427.4      | 0.70                                 | 0.36 | 0.19 |
| 2517.9              | 2487.9      | 0.71                                 | 0.39 | 0.22 |
| 2598.5              | 2568.5      | 0.76                                 | 0.44 | 0.25 |
| 2659.0              | 2629.0      | 0.77                                 | 0.45 | 0.26 |
| 2739.6              | 2709.6      | 0.80                                 | 0.48 | 0.28 |
| 2800.1              | 2770.1      | 0.78                                 | 0.54 | 0.33 |

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# Frequency Mixer

HJK-ED9560/1

## Typical Performance Data

| IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=772MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=632.9MHz<br>(dB) | IF<br>(OUT)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>VS. IF FREQUENCY<br>@RF(IN)=910.1MHz<br>(dB) |
|----------------------|-------------|---------------------------------------------------------------|----------------------|-------------|-----------------------------------------------------------------|----------------------|-------------|-----------------------------------------------------------------|
|                      |             | @LO (dBm)                                                     |                      |             | @LO (dBm)                                                       |                      |             | @LO (dBm)                                                       |
|                      |             | +17                                                           |                      |             | +17                                                             |                      |             | +17                                                             |
| 480.0                | 292.0       | 10.48                                                         | 10.1                 | 643.0       | 6.72                                                            | 430.1                | 480.0       | 9.94                                                            |
| 457.6                | 314.4       | 9.52                                                          | 70.1                 | 703.0       | 6.63                                                            | 419.3                | 490.8       | 9.83                                                            |
| 435.2                | 336.8       | 8.91                                                          | 130.1                | 763.0       | 6.67                                                            | 408.6                | 501.5       | 8.63                                                            |
| 412.9                | 359.1       | 8.20                                                          | 190.1                | 823.0       | 6.67                                                            | 397.8                | 512.3       | 8.11                                                            |
| 390.5                | 381.5       | 7.36                                                          | 250.1                | 883.0       | 6.73                                                            | 387.0                | 523.1       | 7.80                                                            |
| 368.1                | 403.9       | 7.51                                                          | 310.1                | 943.0       | 6.83                                                            | 376.3                | 533.8       | 7.62                                                            |
| 345.7                | 426.3       | 7.85                                                          | 370.1                | 1003.0      | 6.87                                                            | 365.5                | 544.6       | 7.52                                                            |
| 323.3                | 448.7       | 7.93                                                          | 430.1                | 1063.0      | 6.97                                                            | 354.7                | 555.4       | 7.35                                                            |
| 301.0                | 471.0       | 7.87                                                          | 490.1                | 1123.0      | 7.20                                                            | 343.9                | 566.2       | 7.18                                                            |
| 278.6                | 493.4       | 8.50                                                          | 550.1                | 1183.0      | 7.46                                                            | 333.2                | 576.9       | 7.08                                                            |
| 256.2                | 515.8       | 7.54                                                          | 610.1                | 1243.0      | 7.73                                                            | 322.4                | 587.7       | 7.05                                                            |
| 233.8                | 538.2       | 7.10                                                          | 670.1                | 1303.0      | 8.07                                                            | 311.6                | 598.5       | 6.97                                                            |
| 211.4                | 560.6       | 6.95                                                          | 730.1                | 1363.0      | 8.20                                                            | 300.9                | 609.2       | 6.87                                                            |
| 189.0                | 583.0       | 6.69                                                          | 790.1                | 1423.0      | 8.43                                                            | 290.1                | 620.0       | 6.80                                                            |
| 166.7                | 605.3       | 6.63                                                          | 850.1                | 1483.0      | 8.71                                                            | 279.3                | 630.8       | 6.80                                                            |
| 144.3                | 627.7       | 6.55                                                          | 910.1                | 1543.0      | 8.70                                                            | 268.6                | 641.5       | 6.77                                                            |
| 121.9                | 650.1       | 6.49                                                          | 970.1                | 1603.0      | 9.05                                                            | 257.8                | 652.3       | 6.65                                                            |
| 99.5                 | 672.5       | 6.48                                                          | 1030.1               | 1663.0      | 8.99                                                            | 247.0                | 663.1       | 6.63                                                            |
| 77.1                 | 694.9       | 6.46                                                          | 1090.1               | 1723.0      | 8.92                                                            | 236.3                | 673.8       | 6.69                                                            |
| 54.8                 | 717.2       | 6.47                                                          | 1150.1               | 1783.0      | 8.90                                                            | 225.5                | 684.6       | 6.70                                                            |
| 24.9                 | 747.1       | 6.52                                                          | 1190.1               | 1823.0      | 8.76                                                            | 214.7                | 695.4       | 6.62                                                            |
| 10.0                 | 782.0       | 6.84                                                          | 1250.1               | 1883.0      | 8.69                                                            | 203.9                | 706.2       | 6.62                                                            |
| 141.4                | 913.4       | 6.82                                                          | 1290.1               | 1923.0      | 8.50                                                            | 193.2                | 716.9       | 6.69                                                            |
| 240.0                | 1012.0      | 6.96                                                          | 1350.1               | 1983.0      | 8.42                                                            | 182.4                | 727.7       | 6.70                                                            |
| 371.4                | 1143.4      | 7.31                                                          | 1390.1               | 2023.0      | 8.30                                                            | 171.6                | 738.5       | 6.65                                                            |
| 470.0                | 1242.0      | 7.76                                                          | 1450.1               | 2083.0      | 8.22                                                            | 160.9                | 749.2       | 6.66                                                            |
| 601.4                | 1373.4      | 8.23                                                          | 1490.1               | 2123.0      | 8.19                                                            | 150.1                | 760.0       | 6.74                                                            |
| 700.0                | 1472.0      | 8.51                                                          | 1550.1               | 2183.0      | 8.15                                                            | 139.3                | 770.8       | 6.78                                                            |
| 831.4                | 1603.4      | 8.90                                                          | 1590.1               | 2223.0      | 8.17                                                            | 128.6                | 781.5       | 6.77                                                            |
| 930.0                | 1702.0      | 9.05                                                          | 1650.1               | 2283.0      | 8.12                                                            | 117.8                | 792.3       | 6.77                                                            |
| 1061.4               | 1833.4      | 8.95                                                          | 1690.1               | 2323.0      | 8.19                                                            | 107.0                | 803.1       | 6.83                                                            |
| 1160.0               | 1932.0      | 8.74                                                          | 1750.1               | 2383.0      | 8.34                                                            | 96.3                 | 813.8       | 6.87                                                            |
| 1291.4               | 2063.4      | 8.51                                                          | 1790.1               | 2423.0      | 8.46                                                            | 85.5                 | 824.6       | 6.87                                                            |
| 1390.0               | 2162.0      | 8.32                                                          | 1850.1               | 2483.0      | 8.69                                                            | 74.7                 | 835.4       | 6.87                                                            |
| 1521.4               | 2293.4      | 8.24                                                          | 1890.1               | 2523.0      | 8.80                                                            | 63.9                 | 846.2       | 6.91                                                            |
| 1620.0               | 2392.0      | 8.37                                                          | 1950.1               | 2583.0      | 9.06                                                            | 53.2                 | 856.9       | 6.96                                                            |
| 1751.4               | 2523.4      | 8.64                                                          | 1990.1               | 2623.0      | 9.21                                                            | 42.4                 | 867.7       | 6.96                                                            |
| 1850.0               | 2622.0      | 9.04                                                          | 2050.1               | 2683.0      | 9.58                                                            | 31.6                 | 878.5       | 6.96                                                            |
| 1981.4               | 2753.4      | 9.69                                                          | 2090.1               | 2723.0      | 9.74                                                            | 20.9                 | 889.2       | 7.01                                                            |
| 2080.0               | 2852.0      | 10.19                                                         | 2150.1               | 2783.0      | 10.08                                                           | 10.1                 | 900.0       | 7.20                                                            |

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## Typical Performance Data

| LO<br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       |
|-------------|-------------------------|-------|-------|-------------------------|-------|-------|
|             | @LO (dBm)               |       |       | @LO (dBm)               |       |       |
|             | +14                     | +17   | +20   | +14                     | +17   | +20   |
| 210.1       | 55.78                   | 55.89 | 56.13 | 60.10                   | 57.84 | 56.70 |
| 270.6       | 55.15                   | 54.87 | 54.90 | 57.38                   | 55.44 | 54.82 |
| 331.0       | 53.29                   | 53.80 | 54.23 | 55.92                   | 55.30 | 55.38 |
| 391.5       | 51.03                   | 51.35 | 51.51 | 55.37                   | 55.77 | 55.98 |
| 452.0       | 51.28                   | 50.55 | 49.72 | 46.91                   | 46.32 | 45.55 |
| 512.5       | 41.11                   | 41.14 | 41.33 | 73.79                   | 61.59 | 61.25 |
| 572.9       | 38.30                   | 38.76 | 39.13 | 41.07                   | 42.05 | 42.19 |
| 633.4       | 35.88                   | 36.51 | 37.21 | 33.34                   | 33.85 | 33.88 |
| 693.9       | 33.76                   | 34.51 | 35.53 | 29.32                   | 29.86 | 30.16 |
| 754.4       | 33.75                   | 34.50 | 35.38 | 28.13                   | 28.78 | 29.16 |
| 814.8       | 35.78                   | 36.37 | 37.05 | 28.41                   | 29.10 | 29.46 |
| 875.3       | 36.78                   | 37.33 | 37.91 | 28.59                   | 29.35 | 29.79 |
| 935.8       | 36.83                   | 37.53 | 37.82 | 28.58                   | 29.53 | 29.93 |
| 996.2       | 35.24                   | 35.82 | 36.04 | 28.57                   | 29.41 | 29.78 |
| 1056.7      | 35.24                   | 35.81 | 36.06 | 28.26                   | 29.11 | 29.47 |
| 1117.2      | 35.53                   | 36.05 | 36.25 | 27.97                   | 28.78 | 29.12 |
| 1177.7      | 35.86                   | 36.45 | 36.82 | 27.67                   | 28.41 | 28.84 |
| 1238.1      | 36.52                   | 37.56 | 38.12 | 27.45                   | 28.12 | 28.48 |
| 1298.6      | 36.53                   | 37.60 | 38.33 | 27.15                   | 27.73 | 28.17 |
| 1359.1      | 36.09                   | 36.91 | 37.52 | 27.20                   | 27.80 | 28.26 |
| 1439.7      | 35.07                   | 35.82 | 36.34 | 27.69                   | 28.46 | 28.97 |
| 1500.2      | 35.09                   | 36.06 | 36.71 | 27.95                   | 28.90 | 29.57 |
| 1580.8      | 36.82                   | 38.07 | 38.78 | 28.02                   | 28.90 | 29.39 |
| 1641.3      | 37.24                   | 37.92 | 38.20 | 27.91                   | 28.57 | 28.83 |
| 1721.9      | 35.96                   | 36.50 | 36.67 | 27.83                   | 28.45 | 28.68 |
| 1782.4      | 35.40                   | 35.95 | 36.14 | 28.10                   | 28.64 | 28.87 |
| 1863.0      | 34.57                   | 35.17 | 35.33 | 28.52                   | 29.10 | 29.34 |
| 1923.5      | 34.34                   | 34.77 | 35.05 | 29.25                   | 29.59 | 29.97 |
| 2004.1      | 33.94                   | 34.48 | 34.67 | 30.30                   | 30.74 | 31.08 |
| 2064.6      | 33.94                   | 34.62 | 34.88 | 31.58                   | 32.25 | 32.69 |
| 2145.2      | 33.81                   | 34.68 | 35.01 | 34.50                   | 35.95 | 36.95 |
| 2205.7      | 34.27                   | 35.09 | 35.61 | 38.65                   | 42.36 | 45.44 |
| 2286.3      | 35.67                   | 36.75 | 37.44 | 38.27                   | 40.16 | 39.49 |
| 2346.8      | 37.54                   | 39.10 | 40.02 | 32.80                   | 33.12 | 32.69 |
| 2427.4      | 42.00                   | 45.22 | 47.12 | 28.27                   | 28.53 | 28.14 |
| 2487.9      | 44.26                   | 47.17 | 48.23 | 26.24                   | 26.89 | 26.68 |
| 2568.5      | 44.58                   | 47.09 | 47.90 | 25.34                   | 26.45 | 26.48 |
| 2629.0      | 44.86                   | 48.41 | 50.06 | 25.41                   | 26.71 | 26.84 |
| 2709.6      | 41.10                   | 43.22 | 43.91 | 25.48                   | 26.67 | 26.97 |
| 2770.1      | 37.11                   | 38.84 | 39.50 | 25.27                   | 26.36 | 26.65 |

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|---------------------|-------------|-------------------------|-------|-------|
|                     |             | @LO (dBm)               |       |       |
|                     |             | +14                     | +17   | +20   |
| 240.1               | 210.1       | 44.10                   | 46.63 | 42.48 |
| 300.6               | 270.6       | 42.32                   | 42.31 | 37.69 |
| 361.0               | 331.0       | 42.22                   | 37.47 | 30.33 |
| 421.5               | 391.5       | 42.09                   | 45.06 | 40.16 |
| 482.0               | 452.0       | 42.99                   | 44.00 | 41.93 |
| 542.5               | 512.5       | 43.41                   | 45.22 | 44.07 |
| 602.9               | 572.9       | 43.60                   | 43.56 | 43.39 |
| 663.4               | 633.4       | 42.13                   | 41.65 | 41.81 |
| 723.9               | 693.9       | 40.48                   | 39.31 | 38.76 |
| 784.4               | 754.4       | 38.70                   | 38.15 | 36.70 |
| 844.8               | 814.8       | 36.90                   | 35.47 | 33.77 |
| 905.3               | 875.3       | 35.12                   | 34.02 | 32.71 |
| 965.8               | 935.8       | 34.43                   | 33.32 | 33.41 |
| 1026.2              | 996.2       | 33.34                   | 35.48 | 35.34 |
| 1086.7              | 1056.7      | 33.06                   | 34.10 | 33.28 |
| 1147.2              | 1117.2      | 34.49                   | 35.06 | 34.26 |
| 1207.7              | 1177.7      | 34.28                   | 33.43 | 31.70 |
| 1268.1              | 1238.1      | 36.97                   | 36.36 | 34.63 |
| 1328.6              | 1298.6      | 37.39                   | 35.24 | 32.76 |
| 1389.1              | 1359.1      | 37.80                   | 34.56 | 31.97 |
| 1469.7              | 1439.7      | 38.15                   | 33.69 | 31.04 |
| 1530.2              | 1500.2      | 39.58                   | 33.35 | 30.59 |
| 1610.8              | 1580.8      | 43.24                   | 35.18 | 31.63 |
| 1671.3              | 1641.3      | 40.30                   | 35.49 | 32.25 |
| 1751.9              | 1721.9      | 37.50                   | 35.06 | 32.54 |
| 1812.4              | 1782.4      | 37.23                   | 35.19 | 32.87 |
| 1893.0              | 1863.0      | 37.23                   | 35.96 | 33.64 |
| 1953.5              | 1923.5      | 37.39                   | 36.57 | 34.45 |
| 2034.1              | 2004.1      | 38.21                   | 37.80 | 35.78 |
| 2094.6              | 2064.6      | 39.63                   | 38.98 | 36.78 |
| 2175.2              | 2145.2      | 41.96                   | 41.77 | 39.57 |
| 2235.7              | 2205.7      | 43.03                   | 42.79 | 41.55 |
| 2316.3              | 2286.3      | 41.69                   | 40.28 | 39.60 |
| 2376.8              | 2346.8      | 41.29                   | 39.54 | 38.80 |
| 2457.4              | 2427.4      | 46.23                   | 43.18 | 41.43 |
| 2517.9              | 2487.9      | 51.06                   | 55.57 | 50.28 |
| 2598.5              | 2568.5      | 38.36                   | 39.14 | 39.48 |
| 2659.0              | 2629.0      | 35.51                   | 36.58 | 37.35 |
| 2739.6              | 2709.6      | 33.86                   | 35.18 | 36.26 |
| 2800.1              | 2770.1      | 33.49                   | 34.46 | 35.70 |

# Frequency Mixer

HJK-ED9560/1

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF VSWR<br>(:1) |      |      | LO<br>(MHz) | LO VSWR<br>(:1) |       |       | IF<br>(OUT)<br>(MHz) | IF VSWR<br>@LO=900MHz<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|-------|-------|----------------------|-------------------------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |       |       |                      | @LO (dBm)                     |      |      |
|                     |             | +14             | +17  | +20  |             | +14             | +17   | +20   |                      | +14                           | +17  | +20  |
| 240.1               | 210.1       | 1.96            | 1.70 | 1.56 | 210.1       | 54.29           | 54.29 | 54.29 | 10.0                 | 1.08                          | 1.23 | 1.28 |
| 300.6               | 270.6       | 1.75            | 1.49 | 1.36 | 270.6       | 48.26           | 48.26 | 46.96 | 30.5                 | 1.05                          | 1.18 | 1.23 |
| 361.0               | 331.0       | 1.59            | 1.40 | 1.33 | 331.0       | 41.37           | 40.41 | 40.41 | 51.0                 | 1.06                          | 1.18 | 1.24 |
| 421.5               | 391.5       | 1.59            | 1.47 | 1.44 | 391.5       | 33.42           | 32.79 | 31.60 | 71.5                 | 1.14                          | 1.25 | 1.31 |
| 482.0               | 452.0       | 1.69            | 1.61 | 1.59 | 452.0       | 23.18           | 22.00 | 20.95 | 92.1                 | 1.18                          | 1.26 | 1.31 |
| 542.5               | 512.5       | 1.63            | 1.80 | 1.88 | 512.5       | 15.67           | 15.39 | 15.00 | 112.6                | 1.16                          | 1.23 | 1.27 |
| 602.9               | 572.9       | 1.73            | 1.83 | 1.90 | 572.9       | 9.53            | 9.13  | 8.68  | 133.1                | 1.19                          | 1.26 | 1.31 |
| 663.4               | 633.4       | 1.77            | 1.83 | 1.90 | 633.4       | 4.70            | 4.51  | 4.19  | 153.6                | 1.28                          | 1.34 | 1.38 |
| 723.9               | 693.9       | 1.77            | 1.79 | 1.83 | 693.9       | 3.65            | 3.62  | 3.57  | 174.1                | 1.31                          | 1.35 | 1.38 |
| 784.4               | 754.4       | 1.83            | 1.80 | 1.80 | 754.4       | 5.65            | 5.70  | 5.75  | 194.6                | 1.30                          | 1.33 | 1.36 |
| 844.8               | 814.8       | 1.96            | 1.87 | 1.83 | 814.8       | 9.04            | 9.08  | 8.99  | 215.1                | 1.35                          | 1.38 | 1.41 |
| 905.3               | 875.3       | 2.25            | 2.09 | 2.02 | 875.3       | 12.71           | 12.80 | 12.52 | 235.6                | 1.44                          | 1.45 | 1.47 |
| 965.8               | 935.8       | 2.52            | 2.31 | 2.22 | 935.8       | 16.26           | 16.41 | 16.26 | 256.2                | 1.46                          | 1.45 | 1.46 |
| 1026.2              | 996.2       | 2.85            | 2.58 | 2.48 | 996.2       | 19.11           | 19.11 | 18.50 | 276.7                | 1.46                          | 1.46 | 1.48 |
| 1086.7              | 1056.7      | 3.14            | 2.82 | 2.69 | 1056.7      | 22.00           | 21.73 | 20.95 | 297.2                | 1.53                          | 1.52 | 1.54 |
| 1147.2              | 1117.2      | 3.33            | 2.97 | 2.82 | 1117.2      | 23.81           | 23.81 | 23.18 | 317.7                | 1.60                          | 1.56 | 1.57 |
| 1207.7              | 1177.7      | 3.53            | 3.13 | 2.97 | 1177.7      | 24.48           | 23.81 | 22.00 | 338.2                | 1.62                          | 1.57 | 1.57 |
| 1268.1              | 1238.1      | 3.56            | 3.13 | 2.95 | 1238.1      | 25.56           | 25.19 | 24.14 | 358.7                | 1.65                          | 1.62 | 1.62 |
| 1328.6              | 1298.6      | 3.63            | 3.16 | 2.97 | 1298.6      | 24.83           | 24.14 | 22.58 | 379.2                | 1.73                          | 1.68 | 1.68 |
| 1389.1              | 1359.1      | 3.56            | 3.09 | 2.91 | 1359.1      | 24.14           | 23.18 | 21.46 | 399.7                | 1.77                          | 1.68 | 1.67 |
| 1469.7              | 1439.7      | 3.38            | 2.89 | 2.71 | 1439.7      | 22.87           | 22.29 | 21.20 | 420.3                | 1.79                          | 1.71 | 1.70 |
| 1530.2              | 1500.2      | 3.26            | 2.75 | 2.55 | 1500.2      | 22.58           | 21.73 | 20.70 | 440.8                | 1.87                          | 1.79 | 1.77 |
| 1610.8              | 1580.8      | 3.12            | 2.60 | 2.41 | 1580.8      | 20.70           | 19.54 | 17.93 | 461.3                | 1.95                          | 1.85 | 1.83 |
| 1671.3              | 1641.3      | 2.89            | 2.43 | 2.25 | 1641.3      | 19.32           | 18.30 | 17.05 | 481.8                | 1.93                          | 1.81 | 1.78 |
| 1751.9              | 1721.9      | 2.68            | 2.26 | 2.09 | 1721.9      | 17.22           | 16.41 | 15.53 | 502.3                | 1.98                          | 1.86 | 1.83 |
| 1812.4              | 1782.4      | 2.59            | 2.15 | 1.99 | 1782.4      | 15.00           | 14.26 | 13.29 | 522.8                | 2.11                          | 1.97 | 1.94 |
| 1893.0              | 1863.0      | 2.32            | 1.95 | 1.80 | 1863.0      | 12.35           | 11.69 | 10.75 | 543.3                | 2.15                          | 1.99 | 1.95 |
| 1953.5              | 1923.5      | 2.11            | 1.77 | 1.66 | 1923.5      | 10.69           | 10.19 | 9.58  | 563.8                | 2.12                          | 1.95 | 1.91 |
| 2034.1              | 2004.1      | 1.88            | 1.60 | 1.50 | 2004.1      | 8.60            | 8.23  | 7.83  | 584.4                | 2.20                          | 2.04 | 1.99 |
| 2094.6              | 2064.6      | 1.73            | 1.48 | 1.39 | 2064.6      | 7.08            | 6.73  | 6.37  | 604.9                | 2.31                          | 2.13 | 2.07 |
| 2175.2              | 2145.2      | 1.52            | 1.32 | 1.26 | 2145.2      | 5.38            | 5.09  | 4.80  | 625.4                | 2.33                          | 2.13 | 2.06 |
| 2235.7              | 2205.7      | 1.36            | 1.21 | 1.17 | 2205.7      | 4.26            | 4.05  | 3.87  | 645.9                | 2.30                          | 2.11 | 2.05 |
| 2316.3              | 2286.3      | 1.21            | 1.12 | 1.12 | 2286.3      | 3.04            | 2.90  | 2.79  | 666.4                | 2.39                          | 2.19 | 2.12 |
| 2376.8              | 2346.8      | 1.14            | 1.14 | 1.17 | 2346.8      | 2.35            | 2.26  | 2.18  | 686.9                | 2.45                          | 2.23 | 2.15 |
| 2457.4              | 2427.4      | 1.13            | 1.21 | 1.26 | 2427.4      | 1.78            | 1.75  | 1.73  | 707.4                | 2.44                          | 2.21 | 2.13 |
| 2517.9              | 2487.9      | 1.17            | 1.28 | 1.33 | 2487.9      | 1.66            | 1.69  | 1.71  | 727.9                | 2.47                          | 2.25 | 2.18 |
| 2598.5              | 2568.5      | 1.24            | 1.38 | 1.43 | 2568.5      | 1.92            | 2.01  | 2.06  | 748.5                | 2.51                          | 2.29 | 2.21 |
| 2659.0              | 2629.0      | 1.30            | 1.45 | 1.51 | 2629.0      | 2.32            | 2.44  | 2.52  | 769.0                | 2.51                          | 2.28 | 2.19 |
| 2739.6              | 2709.6      | 1.35            | 1.53 | 1.58 | 2709.6      | 2.95            | 3.12  | 3.21  | 789.5                | 2.48                          | 2.26 | 2.18 |
| 2800.1              | 2770.1      | 1.39            | 1.57 | 1.64 | 2770.1      | 3.44            | 3.60  | 3.67  | 810.0                | 2.51                          | 2.31 | 2.24 |

REV. X3

HJK-ED9560/1

101012

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## Harmonics Tables

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | 3   | 8   | 17  | 20  | 29  | 46  | 45  | 46  | 34  | 48  |
| 1  | -      | 32     | +0  | 39  | 12  | 42  | 26  | 45  | 38  | 51  | 50  | 59  |
| 2  | 58     | 49     | 59  | 53  | 57  | 61  | >80 | 63  | 70  | 70  | 73  | 77  |
| 3  | 89     | >80    | 47  | 78  | 69  | >80 | 70  | >80 | 78  | >80 | >80 | >80 |
| 4  | >90    | >80    | >80 | 72  | 78  | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 5  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 6  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 7  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 8  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 9  | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
| 10 | >90    | >80    | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 | >80 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 771.5 MHz; 2.00 dBm.  
LO IN: 741.5 MHz; +17.00 dBm  
IF OUT: 30 MHz; -9.67 dBm

RF HARMONICS ORDER

|    | (-dBm) | (-dBc) |     |     |     |     |     |     |     |     |     |     |
|----|--------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0  | -      | -      | 18  | 24  | 37  | 35  | 42  | 56  | 53  | 57  | 48  | 62  |
| 1  | -      | 33     | +0  | 42  | 13  | 43  | 26  | 45  | 40  | 52  | 52  | 59  |
| 2  | 38     | 47     | 46  | 46  | 53  | 49  | 59  | 51  | 54  | 57  | 58  | 65  |
| 3  | 59     | 77     | 47  | 71  | 47  | 68  | 48  | 66  | 55  | 67  | 60  | 70  |
| 4  | 83     | 83     | 92  | 77  | 80  | 78  | 77  | 79  | 75  | 76  | 77  | 79  |
| 5  | >90    | 93     | 78  | 89  | 71  | 90  | 74  | 95  | 79  | 89  | 79  | 85  |
| 6  | >90    | >95    | >95 | >95 | 92  | 86  | 91  | 86  | >95 | 86  | 88  | 90  |
| 7  | >90    | >95    | >95 | >95 | >95 | 93  | 87  | 94  | 88  | >95 | 86  | >95 |
| 8  | >90    | >95    | >95 | >95 | >95 | >95 | 93  | 90  | >95 | 94  | 92  | 91  |
| 9  | >90    | >95    | >95 | >95 | >95 | >95 | >95 | 91  | 91  | >95 | >95 | 91  |
| 10 | >90    | >95    | >95 | >95 | >95 | >95 | >95 | >95 | >95 | >95 | >95 | >95 |
|    | RF CAL | 0      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |

### LO HARMONICS ORDER

Test conditions: RF IN: 771.5 MHz; 12.00 dBm.  
LO IN: 741.5 MHz; +17.00 dBm  
IF OUT: 30 MHz; 4.86 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.  
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.  
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.